Department of

FISHERIES

19th Annual Report

for the fiscal year ended
March 31, 1954

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Nova Scotia

Department of FISHERIES

19th Annual Report

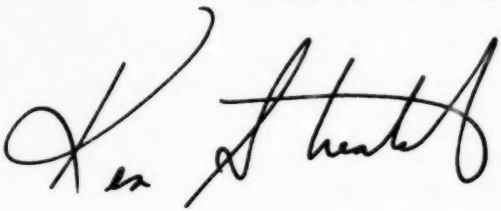
for the fiscal year ended march 31, 1983

To His Honour
The Honourable Alan R. Abraham, C.D.
Lieutenant-Governor of Nova Scotia

May It Please Your Honour:

I have the honour to submit herewith the Nineteenth Annual Report of the Department of Fisheries, for the fiscal year ending March 31, 1983.

Respectfully submitted,



Ken Streatch
Minister of Fisheries

To the Honourable Ken Streatch
Minister of Fisheries

Sir:

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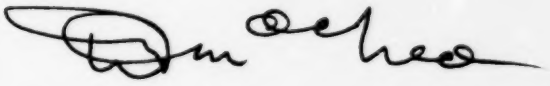

D.A. MacLean
Deputy Minister

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The Fishing Industry

Total landings of commercial marine species in Nova Scotia declined slightly in 1982.

Fishermen in the province landed 469,475 metric tons of fish, shellfish and marine plants in 1982, representing a 2.1 per cent decrease over the 1981 catch of 479,327 metric tons. The landed value of all species decreased 1.6 per cent to $259.4 million, from $263.7 million.

Cod was re-crowned "king of all species" in 1982, replacing scallops as the most important species in terms of landed value, and returning $68.3 million to fishermen. Scallops were second in line, valued at $55.1 million and lobsters provided $49.9 million to those in that sector of the industry.

Groundfish landings increased 5.6 per cent while the landed value of this species group rose 14.5 per cent. The pelagic and estuarial species group showed a modest decline of 3.1 per cent in landings but the landed value increased 30.5 per cent, primarily due to a stabilization of herring prices. Due to a significant decline in scallop catches, the mollusc and crustacean species group showed an overall drop in landings of 20.2 per cent with the landed value down 18 per cent.

During the year the industry was preoccupied with the Kirby Task Force into the East Coast Fishery. Towards year-end the report of this task force was released containing recommendations to improve the groundfish and herring sectors of the fishery.

Industrial Development

The objectives of the Industrial Development Division are to assist in the further development of the fishing industry in areas such as fish quality, operational efficiency, infrastructure and safety. These goals were achieved by providing both technical and financial assistance through the various programs of the division.

Financial assistance provided by the division was generally based on a 50 per cent cost-sharing arrangement with the applicant, up to a maximum contribution of $15,000. Technical assistance was also available upon request for projects undertaken by industry, with emphasis being given to innovative projects or to new technological developments.

Technology Development — Fishing Vessels

Technical assistance was provided to many vessel owners who wanted to install a better and more portable penning arrangement in their open boats in order to meet the new Federal Fisheries Regulations. The department was also involved with providing financial assistance to fishermen who wished to upgrade their onboard fish-holding arrangements.

With the cooperation of industry, various fuel-saving devices were evaluated and a project was carried out with a vessel owner. The demonstration project, which consisted of installing a meter showing fuel flow based on RPM, helped make fishermen more aware of fuel savings resulting from proper use of engine speed.

Although interest in the fitting of Kort nozzles has waned somewhat, due to the economic situation in general and the fishing industry in particular, several inquiries were received and technical advice was given on fitting this type of fuel-saving equipment. The department did not participate in cost-sharing this equipment during the year.

Technical assistance was provided by the division to several boatyards involved with the installation of fishroom insulation and refrigeration, as well as construction methods and techniques. Some fears were expressed that insulation would cause dry

rot in wooden vessels. This is certainly a fact if the insulation is improperly installed. It was decided to select a number of wooden vessels, previously fitted with insulation under the division's progrmm, in order to inspect them and ascertain how they are standing up. Results of these inspections will be the subject of further reports.

Technology Development — Fishing Gear

Evaluation and experimentation continued with various catching methods for traditional and under-utilized species. Efforts were made to decrease overall costs and provide a more efficient means of harvesting the resource.

Longline fishing was given top priority during the year. Random baiting, employing the use of monofilament lines on spools, was evaluated. Floating longlines were tested and gangions with swivels were given extensive trials. Results have been encouraging.

A technical report of the various fish-gutting machines was completed with input from distributors and users of the equipment. This report was made available to the industry.

Further development of otter trawls remained a priority and various groups received the benefit of the technical expertise available from the division.

A joint project was undertaken between the division and the Department of Fisheries and Oceans to develop a suitable fish-washing box for the inshore sector of the industry.

Technology Development — Shore-Based Facilities

The technical staff continued to develop comprehensive construction guidelines for onshore projects assisted through the financial incentive programs of the division. In many cases, this included on-site supervision by the division's engineers, who were assisted in the summer months by engineering students.

Various processors were assisted with the installation of heat pump fish-drying systems. These units provide not only a saving in terms of fuel usage but give more flexibility in a plant's production cycle.

The development of stockfish processing in the province generated a great deal of interest. The division provided technical input in regards to handling and packaging of the product, and a trial shipment was successfully shipped to Africa. Although these experiments demonstrated that good quality stockfish could be produced in the province, a severe market decline, particularly in Nigeria, has discouraged further production at this time.

Continued efforts were made using carbon dioxide as a fish-chilling agent. The project, completed in conjunction with a processor, fishermen and a carbon dioxide distributor, produced inconclusive results. However, further testing will be undertaken in the next fiscal period, as it appears this method of chilling may have certain advantages.

Investigative work was continued into the evaluation of various pieces of available equipment for onboard ice production using seawater. In addition, a standard design was developed for a marine railway which should serve the inshore sector of the industry.

Product Technology and Process Development

This section provides financial and technical assistance to processors and other fishing interests for developmental projects related to the processing technology of traditional and under-utilized species.

Added-value processing of swordfish was examined by smoking a considerable quantity of fillets. Consumer reaction has been quite favourable; development work will continue with canned and individually quick-frozen (I.Q.F.) packs.

The minced lobster bait bag trials were continued. The survey and experimentation provided valuable information that will be used to further evaluate this alternative, and potentially

lower-cost, method of baiting lobster traps. Many fishermen have ordered the bags and they are now being used on a commercial basis.

Work began on the production of artificial bait for the longline fishery. Fish oil is mixed in a gelatin base and placed in capsule form. Continuing efforts will see trial tests in various areas of the province. A breakthrough in this area will be of major benefit to the inshore and near-shore sectors.

Studies of fish silage were continued in cooperation with the Department of Agriculture. Results appear very encouraging.

Financial Incentives — Fishing Vessels

The program's objective was to upgrade the existing fleet in order to take full advantage of the available resource and meet the demands of the marketplace.

Safety is of utmost importance to the division and this was evident in the continuation of cost-sharing for the purchase of approved liferafts.

Over 25 fish-hold refrigeration and insulation projects were completed under a cost-sharing arrangement. Eligible applicants had to comply with construction guidelines developed for this type of vessel upgrading. Due to a decline in the shipbuilding sector, fewer installations were completed during the year compared to previous years.

Cost-sharing, on the basis of 50 per cent, was also provided to inshore fishermen wishing to equip their vessels with insulated fish-storage containers.

Assistance was provided to those applicants equipping their vessels with automatic jigging machines and handline haulers. This program provides special benefit to the smaller boat fishery that is often overlooked in the total context of the industry.

The program to equip vessels with fish-gutting machines was expanded. Twelve projects were cost-shared on a 50 per cent basis and the results have been very promising.

Financial Incentives — Harbour Facilities

The program for improving available facilities in harbours around the coast consisted of two major areas, private wharves and fishermen's service sheds. The fishermen's service shed program was reactivated this year, as staff had examined the results of a study of this program and developed new program guidelines. Ten sheds were completed in the province, constructed by groups of four or more fishermen boat owners.

Private wharf repair and new construction were carried out by fishermen's groups and local processors. Funding was available for approved material, up to a maximum of $15,000, to groups of four or more fishermen or to registered fish plants. Other eligible applicants received a maximum of $10,000.

Two fishermen's slipways were completed according to specific guidelines established by the division. Funding was available to a maximum of $15,000 for approved material.

Financial Incentives — Infrastructure

A number of projects were undertaken to improve existing electrical facilities in and around fish processing plants. Of primary importance was the effect which such improvements would have on energy consumption.

Given the lack of adequate fresh water in many areas of the province, the division provided financial assistance to many plants in Nova Scotia which were developing or upgrading their own water supply systems. The program was co-ordinated with the Nova Scotia Department of Environment and 50 per cent cost-sharing was provided to a maximum of $5,000.

Financial Incentives — Quality

The division provided cost-sharing to a maximum of $30,000 for eligible applicants wishing to construct ice-making and storage facilities. By so doing, applicants were further assisted in the completion of suitable ice-making and storage facilities under the 50 per cent cost-sharing arrangement.

The cool and cold storage program provided much-needed assistance to processors wishing to construct such facilities to hold raw material and/or finished products. The 50 per cent cost-sharing, to a maximum of $15,000, aided in the completion of 23 projects throughout the province.

The division provided 50 per cent cost-sharing on the purchase of insulated fish handling containers and salt fish tanks by processors and fishermen. These containers were constructed of approved materials, usually plastic or fibreglass. The primary objective was to improve the quality of the landed catch. Processors were eligible for containers used in conjunction with a forklift truck, while fishermen could purchase containers constructed of any approved material.

Financial Incentives — Productivity

A marked increase in the number of tubs fished per boat and a general shift to longlining from other types of fishing have placed a strain on existing trawl tub storage facilities. This program has been developed to alleviate this problem by assisting in the expansion of existing facilities, in addition to the construction of new ones by providing 50 per cent cost-sharing to a maximum of $15,000.

There was a significant demand for bait storage and handling facilities in the province, with special emphasis on Cape Breton. The majority of these projects were funded jointly by the department and fishermen's groups, with priority given to those projects which provided benefits to the maximum number of fishermen in each port.

Steam and high-pressure cleaning systems were cost-shared during the year for use in plants and around the wharf.

Because of sufficient processing capacity in the province, funding was not available to any new plant in its initial stages of operation. Processors wishing to become eligible under any program had to provide proof of at least one year of successful operation.

Fisheries Loan Board

During the 1982-83 fiscal year the activities of the Fisheries Loan Board continued to diminish from the peak level reached three years ago.

Twelve Board meetings were held and of the 435 applications considered, 225 were approved, 129 were rejected and five were deferred. The balance were either withdrawn or returned to the applicant because they did not qualify under the Board's regulations. Twenty-five of the approved loan applications were for the assumption of loans already on the books of the Board. Gross value of approved loans totalled $7,633,650 with the net value, after down payments and subsidies, being $5,475,263. Vessel subsidies and grants amounted to $676,424.75 on 40 applications; 172 loans were paid off during the year.

The following table compares loan activity over the past six years:

Year Ending Mar. 31	Loans Considered	Loans Approved	Net Amount Approved	No. of Outstanding Loans	Amount Outstanding
1978	179	169	$ 3,190,554	602	$ 11,406,098
1979	641	607	30,400,000	1,081	21,400,000
1980	929	852	52,550,000	1,765	59,082,800
1981	914	738	39,438,410	2,108	92,434,367
1982	621	382	17,481,477	2,261	107,616,697
1983	435	225	5,475,263	2,234	108,460,960

In addition to the outstanding loans of $108,460,960 during the year, there were commitments of $2,935,889. Advances during the year amounted to $13,964,049 and repayments on loans amounted to $13,092,821. A further $7,013,190 was received in interest. Write-offs during the year amounted to $356,625.48.

A breakdown of the type of loans approved is as follows:

	No.		Amount
New boats to 44'	84	$	2,654,586.31
New boats 44' to 44'11"	2		232,611.40
Draggers & seiners 45' to 100'	2		692,500.00
Longliners 45' to 100'	1		304,762.11
Used boats to 44'	28		693,444.00
Used boats 44' to 44'11"	3		252,400.00
Used boats 45' to 100'	1		239,200.00
Diesel engines	13		155,874.14
Gas engines	1		3,150.00
Deck equipment	14		56,114.07
Electronics	44		108,214.48
Conversions	3		30,789.60
Aquaculture	4		51,636.57
	200	$	5,475,262.68

Loans approved, by counties, were as follows:

	No.		Amount
Annapolis	2	$	14,400.00
Antigonish	7		93,594.60
Cape Breton	3		51,028.57
Colchester	—		—
Cumberland	16		254,497.17
Digby	20		1,441,812.32
Guysborough	9		103,135.03
Halifax	18		245,852.81
Hants	—		—
Inverness	11		143,648.85
Kings	—		—
Lunenburg	9		509,825.11
Pictou	16		170,243.37
Queens	3		277,855.82
Richmond	4		56,739.00
Shelburne	37		859,406.20
Victoria	10		175,864.65
Yarmouth	35		1,077,359.18
	200	$	5,475,262.68

Technical and Inspection Services

During the fiscal year under review, 110 boats of all sizes were completed with Loan Board financing. Technical services were provided during the preliminary planning, and in the construction stages, of these boats. Progress inspections on 126 boats were made by the inspection staff. At the end of the fiscal year 16 of these boats were at various stages of construction and were subject to further inspection. In addition, 97 used boats were inspected and appraised, 88 boats were inspected for engines, equipment and upgrading, and six boat shops were inspected; and 419 boats were inspected for maintenance and housekeeping.

The following new builders were added to the Board's list of approved boat-builders:

Rose Bay Boat Shop, Rose Bay, Nova Scotia
North Shore Boats Ltd., Arisaig, Nova Scotia
Robinson Fisheries Ltd., Granville Ferry, Nova Scotia

Training and Field Service

Training

The department's training programs operated on a wide basis serving the needs of the fishing industry, other government agencies and fishermen from overseas.

The services offered by the division are as follows:

	Inshore	Offshore	Processing
Navigation	Small Craft Master Fishing Master Class IV	Fishing Master I Fishing Master II Fishing Master III	
Engineering	Small Gas and Diesel Diesel Engines Hydraulics	Watchkeeping Engineer Fishing Vessel Chief Engineer 4th Class Engineer	Refrigeration for: Small Plant Operator Assistant to Plant Engineer
Fishing Gear Technology	Basic Skills in Repair and Construction	Deckhand Trawlerman	
Safety	Marine Emergency Duties I Fire Fighting Life Saving, Survival First Aid	Marine Emergency Duties II Life Saving, Survival First Aid	
Business Practices	Family Business Record keeping Taxation Financial Decision-making		Small Plant Operator Record keeping Finance Management
Quality	Included in Fishing Gear Program	Included in Trawlerman Course	Production Staff
Advisory Services	Fishing Gear and Engineering	Design of Special Programs	Design of Special Programs

Transport Canada Certificate Examinations

There continues to be a strong demand for courses in navigation and safety. The main thrust of this demand came from the inshore fleet. While there is no current regulation for Transport Canada certification of the inshore fleet, there is considerable interest in safety and navigation training leading to certification as Fishing Master Class IV.

The safety and navigation certification programs were conducted at the School of Fisheries, Pictou, and in 38 locations throughout the province.

For 1982-83, the Training and Field Service Division achieved a high success rate in Transport Canada Navigation Certificate examinations, results of which are as follows:

Transport Canada Certificate	Number of Courses	Number of Fishermen Attended	Number of Fishermen Passed
Fishing Master Class IV	15	128	109
Fishing Master Class III	4	33	31
Fishing Master Class II	3	17	17
Marine Emergency Duties	9	101	101

Extension Programs in Fishing Communities

A breakdown of the training programs conducted in the fishing communities is as follows:

	No. of Courses	Students Enrolled	Students Completed
Navigation	14	141	131
Inshore Fishing Operations	12	144	144
Business Practices	11	107	107
M.E.D.	7	75	75
Small Gas Engines	4	36	36
Radio Telephone	4	44	44

The planning and co-ordination of the programs in the fishing communities is facilitated through the work of the department's Fisheries Representatives and the cooperation of Canada Manpower officials. Funding for the courses at Pictou and the extension programs is provided through Canada Employment and Immigration and is administered by arrangement with the joint Federal/Provincial Institutional Training Committee.

Nova Scotia School of Fisheries, Pictou

A breakdown of the courses conducted at Pictou is as follows:

(a) Programs under Canada Manpower Institutional Training Program:

	No. of Courses	Students Enrolled	Students Completed
Navigation	8	71	67
M.E.D.	9	99	98
Watchkeeper	1	4	4
Deckhand	2	15	15

(b) Overseas Fishery Training

This is a joint venture between the department and the Canadian Industrial Development Agency (CIDA/VADA).

	No. of Courses	Students Enrolled	Students Completed
Diesel Engines	1	6	6
Outboard Engines/Net and Gear Technology	1	9	9

(c) Other Government Agencies

	No. of Courses	Students Enrolled	Students Completed
Attorney-General (Deckhand)	2	24	24
Attorney-General (M.E.D.)	1	12	12
Attorney-General (Navigation)	1	10	10
Federal Fisheries (Chartwork)	1	12	12

Training Summary

The following table indicates the extent of fisheries training conducted over the past five years:

	1978/79	1979/80	1980/81	1981/82	1982/83
Number of Courses	53	67	96	112	77
Number of Trainees	531	697	1,100	1,141	779
Number Completed	492	639	1,008	1,107	763

New Programs — Quality Control

With the implementation of new regulations on grading of fish at the dockside and revised standards for end-of-line grading in the processing plants, the division will be offering training programs to meet these changes. The courses will be available in December of 1983.

Field Service

The Field Service experienced an extremely active year as it encountered an increased number of problems in the nine geographical regions of the province.

Although the current economics of the fishing industry resulted in a second consecutive year of reduced loan applications, and consequently a slight decline in some of the extension functions associated with the Loan Board, more emphasis was placed on encouraging those in arrears to make suitable arrangements.

In 1982-83 almost 700 confidential reports were completed by the Field Service on loan applicants. In a number of instances, through counselling by the Fisheries Representatives, fishermen in difficulty were able to have other applicants take over remaining debt loads on boats, thus avoiding repossessions and the possible impairment to future credit.

The constant supplying of financial advice, forms and additional loan information to fishermen remained an important function of this section.

Approximately 800 Industrial Development Division applications for assistance, described elsewhere in this report, were taken and rated according to impact and priority. Progress on approved projects was monitored by the representatives. Technical information was often supplied through them as well.

Training activities continued at a significant level with all the local training programs promoted and, to a large extent, coordinated by the Field Service staff. As a result, about 50 extension courses were offered in fishing communities throughout the province while other fishermen were encouraged to attend courses offered at the School of Fisheries in Pictou.

The solving of local problems and the liaison aspects continued to be a significant component of the Field Service. Besides handling many individual and collective problems of fishermen, the Fisheries Representatives constantly relayed requests for improved harbour facilities, better navigational aids,

subsidies, licensing and other matters to federal departments for action.

Dispensing information on government programs and policies continued to be an important role of the section and, in addition, there was participation in industry meetings, exhibitions and career days. Some Fisheries Representatives served on a number of official committees including the Marine Safety Advisory Committee, Scallop Advisory Committee and the Annapolis Valley Affiliated Boards of Trade (Fisheries Sector).

Proposed dump sites for dredging spoils were checked with local fishermen and the findings transmitted to the Department of Environment. Where good fish bottom could be destroyed or impaired, alternate dump sites with accurate co-ordinates were supplied.

A host of federal and provincial employment projects were sponsored by the Fisheries Representatives during the year. The exact number of jobs created is hard to ascertain because in some instances they acted as the catalysts and had fishermen and plant owners act as the official sponsors.

In addition, the Field Service was involved with the Department of Lands and Forests in the administration of fishermen's reserves, land acquisition and disposal.

Marine Resources Division

The Marine Resources Division represents the department, and the fishing industry of the province as a whole, on numerous government-industry advisory committees. Its function is to ensure that the needs of the industry are adequately considered in the development and implementation of management plans for the various fisheries in which provincial fishermen participate. This year the division was represented on 34 official advisory committees dealing with groundfish, pelagics, scallops, marine plants and crustaceans, as well as advising on bilateral agreement discussions with foreign nations. The division also represented the department on five offshore oil and gas committees. The Division Director was designated as co-chairman of the joint Nova Scotia-Canada Fisheries Advisory Committee as provided for in the Canada-Nova Scotia Agreement on Offshore Oil and Gas Resource Management and Sharing. Through the oil and gas committees, the department ensures minimal interference with the fishing industry as a result of offshore exploration and development, and interacts directly with the Canadian Oil and Gas Lands Administration, and with other federal and provincial departments involved in authorizing offshore activity.

The Resource Management and Research section of the division is divided into three units, each dealing with a particular species group: marine plants, crustaceans and pelagic fish. As well as providing expertise in their specific fields for management of the resource, each unit is involved in research programs investigating species and stocks of specific interest to Nova Scotia. These studies are important to the development of new fisheries for the future and to improved management for the present. These programs involve considerable field work for which students are employed. Details of these studies are as follows:

Marine Plants

Research necessary for the development of an optimal harvest strategy for kelp (**Laminaria**) in southwest Nova Scotia continued in 1982. The final report will be available in the fall of 1983 but preliminary results indicate that the most abundant kelp **Laminaria longicrusis** recovers rapidly from harvesting. **Laminaria digitata**, which is less abundant, regrows more slowly.

Results of the studies appear to indicate that the regrowth rate of **Laminaria longicruris** will permit a certain level of sustained harvesting on a yearly basis. At present, only small amounts of **Laminaria** are harvested in Nova Scotia. However, officials from the marine plants industry continue to indicate strong interest in harvesting Nova Scotia kelp, both for extraction of alginates (used in many industrial and food processes) and for consumption as a vegetable.

Crustaceans

In 1982 the division continued its research program investigating various aspects of the growth and survival of stage four juvenile lobsters. Hatchery-reared animals were placed in enclosed structures in the field and subjected to a number of different environmental conditions. The work has yielded information on the behaviour of juvenile lobsters and identified the bottom which appeared to be the most suitable habitat for animals of this size. A manuscript reporting on the findings of this study has been produced.

A lobster hatchery located at Dalhousie University provided about 30,000 stage four juveniles for field study last year. A number of these lobsters were monitored under experimental conditions while others were released at selected sites near the study area in Lennox Passage, Cape Breton.

An underwater research team stationed in Cape Breton conducted the field work in Lennox Passage. In addition, this group was available to carry out other fisheries-related underwater work in eastern Nova Scotia.

In 1982 the division participated in a port sampling program collecting information on lobsters and crabs at fishing ports around the province. Biological data including size frequencies, catch effort and reproductive potentials were gathered and will be used to assess the fisheries as they exist and to project how they may respond in the future.

Herring

On-going studies of the Bras d'Or Lake and Pictou Island herring fisheries have examined some of the adult population characteristics of size and age composition, growth and reproductive maturity. A technical report was prepared on the early life history of herring in the Bras d'Or Lake, which provides information on: (1) spawning substrate, environmental conditions, egg density and mortality; and (2) larval production, dispersal and mortality.

Gaspereau

Little information exists on the biology of gaspereau stocks which spawn in Nova Scotia rivers and lakes. In 1982 gaspereau stocks from the South West Margaree River and Pictou Harbour were studied, since both river systems support commercial fisheries. A tagging study was conducted on the Margaree stock and based on tag returns from the Margaree fishery there appears to be a high degree of homing back to the natal river system. The population dynamics of the Margaree stock have been examined utilizing data from tag returns, age composition, catch and effort, and environmental influences. Studies of fat content in gaspereau stocks from the LaHave River, Pictou Harbour and Margaree River were implemented to assess species differences, fat depletion during migration, and as a factor in fish quality and spoilage. Technical reports are available on these studies.

Estuarine and Inland Fisheries

This division is responsible for planning, developing and carrying out departmental policies and programs to conserve and enhance the fisheries resource at the land-water interface. Major responsibilities include:

1) carrying out resource inventories of estuarine species for input to resource management decisions, commercial development and land use planning;

2) conducting pilot-scale studies, applied research and extension work associated with the development of aquaculture opportunities in shellfish (oysters, mussels) and finfish in estuarine and inland waters;

3) production, distribution and stocking of some 500,000 trout to at least 100 public lakes throughout the province, as well as conducting habitat inventories on potential river-lake feeder systems for trout enhancement measures;

4) providing departmental input to both provincial and federal agencies and intergovernmental committees concerned with managing the resource base in the coastal zone.

The division maintains and operates its own oyster hatchery at Pleasant Point, Halifax County, as well as a pilot-scale demonstration site in adjacent waters for off-bottom oyster and blue mussel culture. The division also operates the major trout-producing hatchery in the province at Fraser's Mills, Antigonish County. Production from this operation provides the majority of trout stocked in public lakes in Nova Scotia. Members of the division staff serve on a number of extra-government committees; and perform extension services to other government departments, and to those working in the inland and estuarine fisheries area.

Aquaculture Development

(1) Blue Mussels

(a) Seed Production

The final distribution of the 1981 seed collectors to industry was completed by early May, bringing the total to 3,700 units, which was slightly short of demand.

The program of collecting wild seed in the Pleasant Point pond was continued during the 1982 season, with 2,700 collectors constructed during April and May. These were placed in the pond in early June, and by early August it was determined that an excellent mussel set had been obtained. Only five per cent of the collectors were withheld from sale and retained for departmental use, due to severe damage from predators.

(b) Grow-out Trials

Techniques most often employed in Nova Scotia for suspended culture of blue mussels involved the use of Pleasant Point collectors (rigid plastic mesh), plastic sleeving, or a combination of both. Although both materials have been used for a number of years, virtually no quantitative data are available comparing the two materials under controlled conditions. To clarify the situation, a series of tests was started at Pleasant Point during the 1981 growing season.

Preliminary conclusions obtained during the 1982 season indicate the following:

- timing and intensity of thinning operations will vary from site to site depending on temperature, salinity and water exchange;

- no significant increase in growth or yield will result from resleeving seed unless the technique results in an actual decrease in the number of animals per unit area of substrate to below critical density.

— suggestions on effective thinning and re-sleeving based on experimentation can now be made.

A detailed report on these growth trials will be prepared over the winter.

(2) Oysters (**Ostrea edulis**)

During the 1982 season, investigation continued into brood stock conditioning as a means of increasing larval production, focusing primarily on the food and feeding regime. The new unit proved so effective that plans for the 1983 season include utilizing it for conditioning the major portion of the brood stock.

(3) Hatchery Development

Work continued during the past season in improving general management techniques in the hatchery consistent with the goal of commercialization of the system. The following is a list of projects undertaken:

(a) The **Flagellate chromonas** species was successfully cultured in large quantities during the winter and early summer months. This species was chosen as a potential food source because of its high lipid content suspected to be beneficial for conditioning adults for spawning and larvae for metamorphasing. This species was fed as a supplement with **Platymonas** which also grows well during the colder months.

(b) Tests commenced on larger scale production of diatoms which have proven useful at other hatcheries but which have been cultured with only marginal success at Pleasant Point. **Thasasiosara clone 3H** performed below expectation but a second species, **Chaetoceros calcitrans**, was cultured very successfully at all stages. A number of batches continued giving daily harvests of 100 litres for up to 25 days.

(c) Tests were run on the effectiveness of Chlorine sterilization of carboys to eliminate the costly ten-hour pasteurization process. This proved generally successful, however, further refinement is necessary.

(d) Continued use of the outdoor algal production unit confirmed the previous year's findings that outdoor production was only dependable during the mid-June through August period when conditions are suited to maintaining near optimum 20-23 degree temperatures for growth. Such a system might lend itself to the hatchery production of **Crassostrea virginica** which can be set during late summer. However, culture of **Ostrea edulis** demands peak food production during April and May.

(e) An experimental outdoor nursery was constructed to maintain the overflow production of spat from the hatchery. Generally, the nursery performed well, but unavoidable overcrowding during June and July did not permit full evaluation of its usefulness for growing spat. Tests will continue during the coming season.

(4) Quahogs

One spawning of Quahogs (**Mercenaria mercenaria**) was induced during early spring when a number of hatchery tanks became available for use. Approximately nine million larvae were obtained of which about three million were grown to setting size. An experiment was set up to study the over-winter survival of this seed in bottom plots and floating trays. Results should be available early in the new year.

(5) Salmonids

The stock of rainbow trout which had been successfully overwintered at Pleasant Point pond reached market size by July. At that time approximately one-half of the fish were harvested and marketed through a local producer. Response to the product was positive.

The results of this test indicated that top quality rainbow trout could be cultured successfully at selected sites along the Eastern Shore and that production can be scheduled to correspond with peak demand periods.

(6) Seed Production

Hatchery records indicate that 1,300,000 seed were produced during the growing season under review. This was the largest successful setting of **Ostrea edulis** to date, primarily the result of superior larval production from the conditioning unit during June.

Fifteen thousand **Crassostrea virginica**, ranging in size from 25mm — 55mm, were provided to two growers in the Northumberland Strait area. A smaller amount of 50mm seed was provided to staff of the federal Department of Fisheries and Oceans for research purposes.

Hatchery work on **Crassostrea virginica** was minimal during the year, with emphasis being placed on **Ostrea edulis** production, the supply of which was more critical to the industry. However, several batches of the former species were produced to assess techniques of cultchless setting. The results indicated that larvae of this species are more selective of cultch type than **Ostrea edulis** with the preferred being shell chips. Marble and limestone chips provided poor results.

In September, 5,000 seed were made available to the Research and Productivity Council in Fredericton for experimental work at Deer Island, New Brunswick.

(6) Extension Efforts

As in prevous years, extension services provided to industry and others were significant. A summary is as follows:

Telephone/written contacts	262
Visits to hatchery	98
Workshops provided	6
Career Orientation presentations	2
Government Committee meetings	7
Industry/Government meetings	11
Conferences	2

Inland Fisheries

Administration of the Fraser's Mills Fish Hatchery in Antigonish County was assumed by the division on July 2, 1982. Responsibility for trout production programs include the following:

(1) Determination of the provincial level of production required from year to year with a minimum production of 250,000 at Fraser's Mills and a maximum of 250,000 from Department of Fisheries and Oceans hatcheries.

(2) Provision of trout eggs from broodstock at Fraser's Mills to federal hatchery sites at Coldbrook, Kings County; Yarmouth, Yarmouth County; Cobequid, Cumberland County; and Margaree, Inverness County, to meet the above production.

(3) Provision of fish food and other expendable items required for rearing trout for the department.

(4) Distribution and stocking of fingerling and yearling stage trout from Fraser's Mills and federal hatcheries to public waters.

In addition, representatives from the department and the federal Department of Fisheries and Oceans co-chair the twice yearly meetings of the Trout Management Advisory Committee concerning the interim management of all trout species during the tenure of the Federal/Provincial Agreement on Trout. As well as maintaining traditional efforts, a number of innovative programs have been started, details of which follow:

Distributions

From September through November of 1982, 90 selected lakes throughout the province were stocked with more than 300,000 speckled trout as part of the fall fingerling wild replenishment program. Lakes were chosen on the basis of their biological suitability for such plantings. These fish were reared at the department's hatchery, and under contract at federal hatcheries at Coldbrook, Yarmouth, Cobequid and Margaree.

An additional 60,000 fall fingerling speckled trout and 10,000 rainbow trout fall fingerlings were transferred to the Department of Lands and Forests holding ponds at Kelly Lake for spring stocking in 1983. There were 20,000 speckled trout and 35,000 rainbow trout retained at the Fraser's Mills facility and 15,000 speckled trout fall fingerlings were retained at the federal site in Yarmouth. All were destined for distribution in the spring of 1983 as part of the yearling put and take urban fishing program.

Applications to purchase trout fingerlings were received from more than 100 private pond owners throughout the province, requesting in excess of 30,000 fish. Upon approval, these applications are incorporated into the division's long-term production plans.

Research

The Fraser's Mills Hatchery provided more than 1,200 trout to university researchers in Nova Scotia to work on projects including fish growth, disease, physiology and genetics. In the latter instance the department, in conjunction with St. Francis Xavier University, cross-spawned sea-trout from the South River Sea-trout Project with the Antigonish domestic strain. Thirty-six individually inventoried crosses were maintained and monitored on the hatchery site. Preliminary research results indicate that the Antigonish domestic strain of speckled trout are less homozygous genotypically than was previously assumed.

The department, in conjunction with the Department of Fisheries and Oceans, Department of Lands and Forests, and St. Francis Xavier University, was involved in the South River Sea-trout Project. This involved the operation and maintenance of a two-way fish fence installed in the South River, Antigonish County, for the spring, summer and fall of 1981 and 1982. Migrations of anadromous fish species, with emphasis on sea-run speckled trout, were monitored. In addition, information was collected on environmental factors influencing the timing and direction of migration, population size, growth rates and age structure of the migrating populations.

Extension Efforts

Numerous requests for trout-rearing information and site evaluations were responded to throughout the year. More than 30 site tours at the Fraser's Mills facility were conducted for school children, in addition to a number of tours conducted for visiting professionals involved in salmonid culture activities internationally. Public visitors to the hatchery exceeded 8,000.

The division was represented at the federal Fish Health Conference in Halifax, and the Canadian Society of Environmental Biologists Conference in Prince Edward Island. Departmental programs were presented to the provincial conference of the Nova Scotia Wildlife Federation, as well as to meetings of individual wildlife groups in Lunenburg, Halifax, Hants County, Kings County and West Pictou. These presentations included past, present and future plans and programs.

New Programs

About 1.5 million speckled trout eggs were deposited in artifical redds (nests) in streams in Kings, Hants, Shelburne, Pictou and Antigonish counties in the fall of 1982 and winter of 1983. This program has been determined to be the most efficient utilization of a genetic trout strain developed at Fraser's Mills over the past eight years. On-site tests have indicated an egg-to-fry survival rate in excess of 70 per cent.

In addition to the egg implantation program, the use of upwelling streamside incubator units as a rearing technique was initiated in February, 1983. This past season, 300,000 speckled trout eggs were placed in three incubator units, two at the Fraser's Mills site, and one in the Black River area of Kings County. The latter unit was placed with the cooperation of the Kings County Wildlife Association. The on-site units at Fraser's Mills had a 90 per cent survival rate while site specific problems at the Kings County unit yielded a 60 per cent survival rate which is still roughly two to four times better than could have been expected under ideal wild conditions.

Through the Department of Development Winter Works Program the division was able to conduct surveys of the physical parameters of trout habitat in 105 kilometers of streams in three selected areas of the province. The purpose of this project included the selection of suitable sites for the enhancement of local trout populations. Analysis of existing data should be completed in the next fiscal year and it is hoped that an on-going survey program can be conducted. The data will provide information on potential sites for the installation of streamside incubators, artificial redds, fry, fingerling or yearling stocking as well as for habitat rehabilitation and enhancement.

Planning and Finance

This division provides administrative support to the Department as a whole, including financial, personnel and office services. In addition, planning, economics and statistical services are provided to the Department.

Market development and promotion activities continue to play an increasing role in the division's activities, in an attempt to improve market opportunities for fishery products from Nova Scotia.

Information services are also provided for those in the fishing industry, and for the general public.

In addition to the normal functions of the division, considerable effort was devoted to two other areas during the fiscal year under review.

Kirby Task Force on Atlantic Fisheries

This highly publicized task force was appointed by the Federal Government in January, 1982, as a result of serious difficulties being encountered within the Atlantic groundfish and herring fisheries. The mandate of the task force was to recommend, ". . . . how to achieve and maintain a viable Atlantic fishing industry, with due consideration for the overall economic and social development of the Atlantic Provinces."

The department consulted with the task force on several occasions, providing a written submission during the initial meetings. Subsequently, provincial comments were provided on the task force's interim paper, "Issues and Options". During the final consultations, the department reviewed and commented upon the final conclusions and recommendations.

At the end of the fiscal year, various sections of the department were participating in the initial stages of planning and implementation of task force recommendations, such as those relating to quality improvement where provincial involvement is required.

Nova Scotia Fisheries Advisory Council

The Nova Scotia Fisheries Advisory Council, with members representing the entire spectrum of the provincial fishing industry, met three times during the fiscal year under review.

In July of 1982, Council met with members of the Kirby Task Force to discuss the work of the task force and the Province's submission to that body. Other topics on the agenda of this meeting included provincial fish plant regulations, "Inshore Superport Concept", and fisheries market promotion.

In November, Council met to discuss fish auction markets and the possibility of a regulated halibut fishery. Fish plant regulations and the Kirby Task Force were again included as topics at this meeting.

The last meeting of Council was in March, 1983, during which the Kirby Task Force Report was the main topic of discussion. Recommendations were made to the Minister regarding all aspects of the report.

Loan Board interest rates and fishing vessel licensing and quotas, as well as Council's concern with federal funding of harbour facilities in Nova Scotia, were other issues addressed during the year.

Some of the major projects undertaken by the division during the year under review include:

Economic Studies and Projects

(a) Georges Bank Boundary Issue

Both Canada and the United States have submitted their respective memorials to the World Court at The Hague, this being the first stage in the presentation of positions and legal arguments in this boundary dispute. Counter-memorials and verbal arguments will be presented during the forthcoming fiscal year, with a decision expected in 1984.

Because of the great importance of Georges Bank to the Nova Scotia fishery, the department has maintained close liaison with the Department of External Affairs and the federal Department of Fisheries and Oceans on this matter. This department has, on occasion, provided information to assist in the development and presentation of Canada's case.

(b) Fishing Vessel Cost and Earnings Study

The cost and earnings study of fishing vessels in Nova Scotia has continued as a joint project with the federal Department of Fisheries and Oceans. Operating data from a representative sample of various types of fishing vessels was collected and analyzed to produce an annual report summarizing the economic performance of each vessel class.

The information from this on-going study is used by government and the industry for a variety of purposes including financial analysis of investments in fishing craft, comparing the performance of various types of vessels and fishing gear, and assessing the impact of specific cost and earnings factors such as increasing energy costs and vessel licensing policies.

(c) Review of Longline Bait Situation — 1982

The division, in conjunction with the Industrial Development Division, examined the bait supply situation for the longline fishery by addressing the reasons for the apparent high costs to fishermen. Both fishermen and processors involved in handling bait were interviewed concerning the various factors contributing to bait costs and the reasons behind high prices.

The present role of the department's bait freezing and trawl tub storage program was scrutinized as well as other available alternatives. Recommendations were made with the intent of stabilizing the bait market and minimizing the effects of a bait shortage in the future.

(d) Distribution and Characteristics of the N.S. Fishing Fleet

A report initially compiled in 1978 was updated. The latest version describes the commercial fishing fleet in the province. The graphical and tabular format shows the distributions, delineated by length, age, hull type, engine horsepower and gear, on a regional basis throughout the province.

(e) Replacement Schedules and Age Profiles — N.S. Fleet

Based on age profiles, replacement schedules were devised for the various types and sizes of fishing vessels in the province. Replacement strategies were developed to maintain the same average age structure of the fleet, as well as to lower the average age to more acceptable levels. These strategies and data are useful to determine the future levels of capital investment needed in the Nova Scotia fishing fleet, and as market forecasts for the boat-building industry in the province.

(f) Socio-economic Data

Briefings were prepared on several specific fish species which were encountering economic or marketing difficulties during the year. A variety of economic and statistical information was also provided to other areas in the department in support of their program planning and evaluation activities.

Market Development and Promotion

(a) General

The role of this section is, first, to provide comprehensive and timely information to the fishing industry on seafood market opportunities world-wide, as well as ensuring that information on Nova Scotia seafood exporters and products is available internationally. Secondly, the section assists in the promotion of Nova Scotia seafood within the province and outside.

(b) Seafood Publications

The Directory of Fish Products for Nova Scotia was updated and reprinted. This directory is a buyer's guide for Nova Scotia seafood products and provides a comprehensive listing of seafood producers and exporters in the province, together with descriptions of products offered for sale. The publication has proved to be a most useful and effective information source. As a result, it is planned to reprint the directory annually.

The publication and distribution of seafood recipe brochures and posters is another major promotional activity. A new brochure on mussel recipes was produced during the year and more than 200,000 of the existing recipe brochures were distributed in Canada and the United States. Seafood promotion posters were also distributed to retail stores and restaurants.

Work commenced during the year on an audio-visual presentation for seafood retailers with expected completion during the next fiscal period. Included in this project is a handbook for retailers. The presentation and handbook are in response to the need, identified by seafood retailers and their staff, for information on how to purchase, prepare, display and market seafood better.

(c) Seafood Advertising

Several new approaches to seafood advertising were undertaken by the department during the year. Full-page advertisements featuring Nova Scotia seafood were placed in the magazine, "Restaurants and Institutions", a major United States trade publication. As well, billboards promoting seafood consumption were placed on Halifax-Dartmouth Metro Transit buses during November Fish and Seafood Month.

With the cooperation of Maritime Tel and Tel, seafood promotion inserts were included in all telephone bills distributed to subscribers in the province during November. This proved to be a very economical and effective means of reaching Nova Scotia consumers.

(d) Food Shows and Demonstrations

The department organized a major display at Seafood '83, a seafood trade show held in Boston. The design and construction of a new booth were commissioned from the Department of Government Services. It was then shared by various Nova Scotia exhibitors at this highly successful show.

The department's home economist provided support services, such as seafood sample preparation, for processors and exporters attending national and international food shows like Hostex in Toronto, and Rendezvous in Montreal. A successful seafood promotion was also undertaken with the Westin Hotel in Winnipeg.

Within the province, the home economist provided numerous seafood cooking displays at exhibitions, shopping malls and other public events. Such promotions are aimed at increasing the Nova Scotia consumer's awareness of seafood and how to prepare it. In addition, seafood information is frequently provided on radio shows aimed at the homemaker. Recipes and other helpful hints are carried by newspapers in the province.

(e) Stockfish Production

A project was undertaken with industry to assess the feasibility of producing stockfish on a commercial scale in the province. This product has traditionally been produced in Iceland and Norway and results from the natural drying of whole gutted groundfish, such as cod, on outside racks without the use of any salt whatsoever. The project proved that stockfish of marketable quality could be produced in Nova Scotia but, unfortunately, the production coincided with the effective collapse of the Nigerian market. Although the product was eventually sold, existing market conditions are not encouraging for further production.

Public Information Services

(a) Administrative Information and Control System

During the year, software development was completed and historical data was entered into the department's mini-computer system. Efficiency was greatly improved in the administration of fisheries loans and incentive grant programs. Similar results are anticipated with fishermen training records once all historical data is entered. Not surprisingly, other sections of the department have found uses for the computer, such as inventory control and statistical manipulation of landing and port data. Toward year-end, data storage was becoming a problem and various solutions were being analyzed.

(b) Fisherman's Handbook

The second edition of the Fisherman's Handbook was published in a version suitable for a two-year period. The inclusion of selected tide tables in this edition was a major improvement that was widely accepted by fishermen. However, industry feedback late in the fiscal year suggested that annual editions would be better received by fishermen.

(c) Nova Scotia Seafood Cookery

During the year, the department successfully launched a seafood cookbook that has exceeded initial expectations for public acceptance. By the end of the year more than 3,500 copies of the book had been sold, primarily in Nova Scotia. In addition, an agreement was reached with a Nova Scotia publisher to market 5,000 copies throughout Canada, and to reprint the book in a paperback version once the first edition was exhausted.

(d) Weatheradio Canada

The coverage problems of the past few years, particularly in Cape Breton, were solved when two new transmitters became operational at Cheticamp and Ben Eoin. Once operations commenced at these two sites, the department received no further complaints from fishermen about the availability of weather information. Towards year-end, the department assisted Environment Canada's Atmospheric Environment Service by circulating plans for new marine weather forecast areas throughout the industry. These new forecast areas will serve fishermen by reducing the size of existing forecast zones and thereby offer more precise weather information.

(e) Exhibitions

The new fiscal year commenced with the department being represented at Fish Canada '83, the first Canadian fisheries exhibition, which was held in Halifax. In addition, exhibits were entered at the Nova Scotia Fisheries Exhibition and Fishermen's Reunion in Lunenburg and the Pictou Lobster Carnival. Towards the year-end, planning was well under way for a booth at the Atlantic Fisheries Trade Show, scheduled for Yarmouth early in the next year.

Statistical Review

All fisheries production statistics given here for the calendar year 1982 are revised figures supplied through the courtesy of the federal Department of Fisheries and Oceans. They may be subject to minor adjustments, as late returns from firms and individuals are received and processed in that Department.

Nova Scotia Fisheries Major Species Landings of those Species Yielding Over One Million Dollars Annually

(Listed in Descending Order of Value in 1982)

		Landings (Metric Tons)		Value ($,000)	
		1982	1981	1982	1981
1.	Cod	154,387	128,249	$88,306	$53,942
2.	Scallops	59,616	79,960	55,103	88,336
3.	Lobsters	8,803	7,891	49,956	41,314
4.	Haddock	44,383	50,567	22,366	23,014
5.	Herring	80,044	84,240	15,253	12,439
6.	Pollock	35,993	38,299	10,622	10,237
7.	Halibut	1,929	1,528	5,355	4,044
8.	Flounders	18,602	19,171	4,587	6,637
9.	Redfish	17,643	20,529	3,759	4,106
10.	Crabs	2,463	1,596	3,190	835
11.	Hake	8,928	8,886	2,730	2,418
12.	Cusk	6,287	5,958	2,663	2,568
13.	Swordfish	943	572	2,633	1,256
14.	Shrimp	1,303	2,482	2,452	5,322
15.	Mackerel	7,752	6,612	1,954	1,485
16.	Clams	2,393	2,149	1,656	1,514

Table I
Nova Scotia Fisheries
Landed and Marketed Value
1950-1982

(Value in $,000)

Year	Landed Value	Marketed Value
1950	$ 21,400	$ 38,819
1955	23,582	47,093
1960	26,094	51,753
1965	49,371	93,443
1970	55,652	105,939
1975	91,010	208,574
1980	230,911	438,799
1981	263,727	484,182
1982	259,411	492,881 (1)

(1) This is an estimate based upon recent average past relationships between landed and marketed values.

Table II
Nova Scotia Fisheries
Landings and Landed Value by Species Group

	Landings (Metric Tons)		Value ($,000)	
	1982	1981	1982	1981
Groundfish	293,473	277,879	$124,225	$108,457
Pelagic and Estuarial ...	91,533	94,498	21,514	16,480
Molluscs and Crustaceans	75,793	94,976	112,798	137,665
Miscellaneous (1)	8,670	11,965	861	1,107
Viscera, Scales (2)	6	9	13	18
	469,475	479,327	$259,411	$263,727

(1) Seaweeds, worms.

(2) Livers, tongues, scales, roes, liver oil, skins.

Table III
Landed Value of Fisheries by Counties

County (1)	Landed Value (2) ($,000)		Per Cent Change (3)
	1981	1982	1981/82
Lunenburg	$ 73,328	$50,302	– 31.4
Shelburne	38,385	45,676	+ 19.0
Digby	34,760	33,941	– 2.4
Yarmouth	29,593	34,490	+ 16.5
Cape Breton	19,952	23,264	+ 16.6
Guysborough	16,345	17,614	+ 7.8
Halifax	13,857	15,878	+ 14.6
Queens	13,282	9,288	– 30.1
Inverness	7,237	10,984	+ 51.8
Victoria	4,754	5,416	+ 13.9
Richmond	3,482	3,633	+ 4.3
Pictou	3,439	3,213	– 6.6
Antigonish	2,449	2,597	+ 6.0
Annapolis	1,252	991	– 20.9
Cumberland	691	1,099	+ 59.0
Colchester	678	709	+ 4.6
Kings	227	293	+ 29.1
Hants	16	23	+ 43.7
	$263,727	$259,411	– 1.6

(1) Counties are in order of the 1981 landed value.

(2) Landed value includes groundfish, pelagic and estuarial, molluscs and crustaceans, viscera, seaweed and other.

(3) Increase (+); Decrease (–).

Table IV
Total Landed Weight of Fisheries by Counties

County (1)	Landed Weight (2) (Metric Tons)		Per Cent Change (3)
	1981	1982	1981/82
Lunenburg	117,320	97,576	– 16.8
Shelburne	63,780	63,357	– 0.7
Yarmouth	61,678	69,741	+ 13.1
Cape Breton	51,634	53,304	+ 1.3
Guysborough	50,648	46,123	– 8.9
Digby	48,633	51,879	+ 6.7
Halifax	25,878	31,210	+ 20.6
Queens	17,855	12,773	– 28.5
Inverness	14,929	17,330	+ 16.1
Richmond	10,594	11,553	+ 9.1
Victoria	7,075	6,161	– 12.9
Pictou	3,948	3,533	– 10.5
Antigonish	2,270	2,050	– 9.7
Annapolis	1,683	1,209	– 28.2
Colchester	692	769	+ 11.1
Cumberland	466	540	+ 15.9
Kings	238	257	+ 8.0
Hants	6	110	+ 1733.3
	479,327	469,475	– 2.1

(1) Counties are in order of the 1981 landed weight.

(2) Landed weight includes groundfish, pelagic and estuarial, molluscs and crustaceans, viscera, seaweed and other.

(3) Increase (+); Decrease (–).

Table V
Landed Weight and Landed Value of Fisheries by Species Group by Counties (1981-1982)

County	Species Group (1)	Landed Weight (Metric Tons)		Landed Value ($,000)	
		1981	1982	1981	1982
Annapolis	Groundfish	984	681	$601	$444
	Pelagic	92	75	26	44
	Shellfish	607	453	625	503
	Other	—	—	—	—
Antigonish	Groundfish	1,501	1,164	335	271
	Pelagic	214	362	207	254
	Shellfish	555	524	1,907	2,072
	Other	—	—	—	—
Cape Breton	Groundfish	45,674	47,158	15,451	17,955
	Pelagic	4,489	3,052	925	729
	Shellfish	1,470	2,094	3,574	4,580
	Other	1	—	2	—
Colchester	Groundfish	18	21	33	31
	Pelagic	25	13	17	15
	Shellfish	649	735	628	633
	Other	—	—	—	—
Cumberland	Groundfish	6	48	16	25
	Pelagic	253	229	127	98
	Shellfish	205	262	543	975
	Other	2	1	5	1
Digby	Groundfish	18,880	25,006	8,362	12,531
	Pelagic	8,944	8,431	981	1,001
	Shellfish	20,809	18,442	25,414	20,409
	Other	—	—	3	—
Guysborough	Groundfish	29,963	35,654	10,519	12,513
	Pelagic	19,193	7,221	2,680	876
	Shellfish	1,490	3,248	3,140	4,225
	Other	2	—	6	—

Table V Continued

County	Species Group (1)	Landed Weight (Metric Tons)		Landed Value ($,000)	
		1981	1982	1981	1982
Halifax	Groundfish	21,339	26,691	$ 9,572	$12,410
	Pelagic	3,447	4,102	1,609	2,394
	Shellfish	1,089	413	2,669	1,064
	Other	3	4	7	10
Hants	Groundfish	—	—	—	—
	Pelagic	6	110	16	23
	Shellfish	—	—	—	—
	Other	—	—	—	—
Inverness	Groundfish	11,400	12,664	3,600	4,462
	Pelagic	1,604	2,050	285	509
	Shellfish	1,925	2,616	3,352	6,012
	Other	—	—	—	1
Kings	Groundfish	137	71	105	54
	Pelagic	90	161	46	65
	Shellfish	11	24	74	173
	Other	—	1	2	1
Lunenburg	Groundfish	64,864	59,699	18,463	18,470
	Pelagic	3,156	3,943	560	794
	Shellfish	49,300	33,934	54,305	31,073
	Other	—	—	—	1
Pictou	Groundfish	639	449	142	113
	Pelagic	1,530	1,418	308	305
	Shellfish	1,104	791	2,908	2,685
	Other	675	875	81	110
Queens	Groundfish	11,501	8,064	6,226	4,645
	Pelagic	599	580	105	220
	Shellfish	5,755	4,129	6,951	4,424
	Other	—	—	—	—

Table V Continued

County	Species Group (1)	Landed Weight (Metric Tons)		Landed Value ('000)	
		1981	1982	1981	1982
Richmond	Groundfish	9,908	10,329	$ 2,968	$ 2,902
	Pelagic	579	1,078	141	255
	Shellfish	107	146	373	476
	Other	—	—	—	—
Shelburne	Groundfish	46,906	50,797	25,865	30,041
	Pelagic	6,956	5,449	1,337	1,858
	Shellfish	2,429	2,236	10,748	13,439
	Other	7,489	4,875	435	338
Victoria	Groundfish	3,917	3,021	1,598	1,284
	Pelagic	2,188	2,039	658	973
	Shellfish	970	1,101	2,498	3,159
	Other	—	—	—	—
Yarmouth	Groundfish	10,242	11,956	4,605	6,070
	Pelagic	41,216	50,215	6,470	11,103
	Shellfish	6,418	4,651	17,934	16,906
	Other	3,802	2,919	583	411

(1) "Pelagic" includes pelagic and estuarial.
"Shellfish" includes molluscs and crustaceans.
"Other" includes livers, tongues, scales, roes and oil, sea plants, mammals, worms.

Table VI
Atlantic Provinces Landings and Landed Value
1982

	Landed Weight (Metric Tons)	Landed Value ($,000)
Nova Scotia	469,475	$ 259,411
Newfoundland	505,811	173,125
New Brunswick	111,029	67,377
Prince Edward Island	45,725	34,428

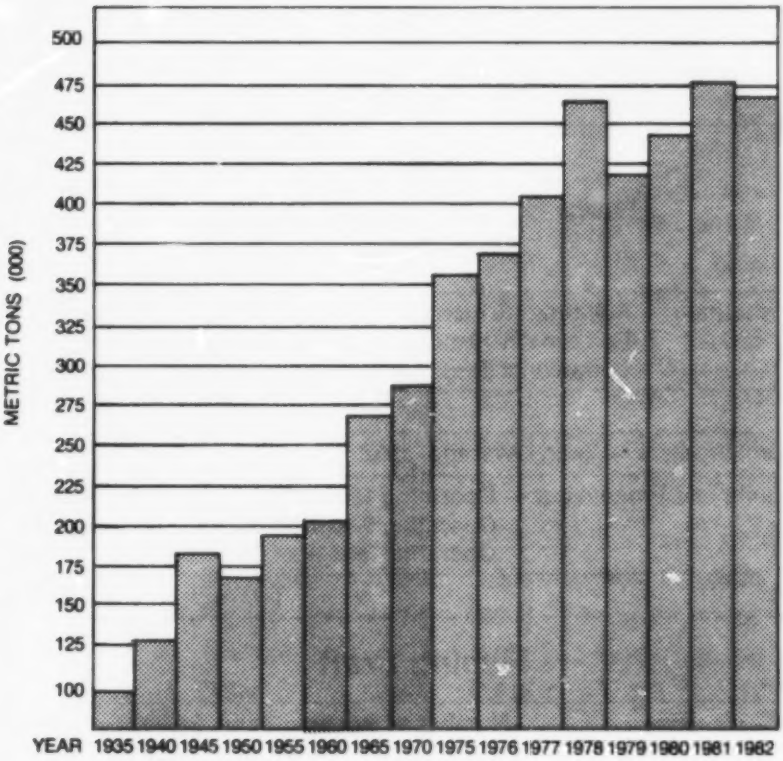
Table VII
Nova Scotia Fishery Profile
Employment

Fishermen —	Full-time (10 months or more - 1982)	6,366
	Part-time (5-10 months - 1982)	1,407
	Occasional (less than 5 months - 1982)	3,192
	TOTAL	10,965
Plant Workers —	Yearly Average - 1982	7,973
Plants and Processors —	Operating 12 months	109
	Operating 5-10 months	70
	Operating less than 5 months	7
	TOTAL	186

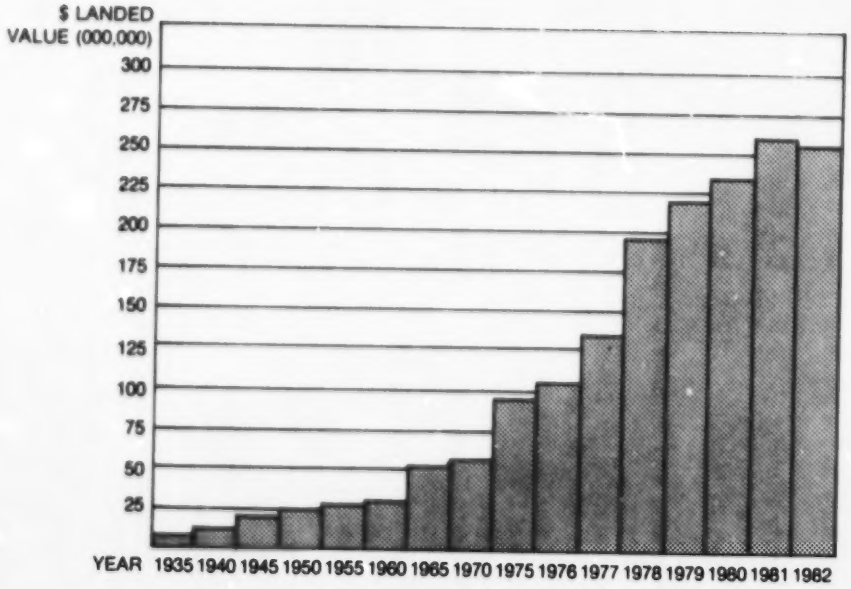
Fishing Craft

Tons	Number of Boats	Value ($,000)
0 - 9.9	3,955	$ 21,302
10 - 25.9	1,808	54,835
26 - 49.9	310	45,413
50 - 99.9	138	43,643
100 - 149.9	30	12,580
150 - 499.9	119	100,215
500 +	36	128,611
TOTAL	6,396	406,599

Nova Scotia
Landings Profile



Nova Scotia
Landed Value Profile



Department of Fisheries

Telephone 424-4560 - Halifax
485-4525 - Pictou
485-5056 - Pictou

Minister	**Hon. John G. Leefe**	**Halifax**
Secretary to the Minister	Mrs. S.M. Grandy	Halifax
Deputy Minister	**D.A. MacLean**	**Halifax**
Secretary to the Deputy Minister	Miss M.L. Evans	Halifax
Planning and Finance Division		
Director	G.R. Richard	Halifax
Secretary to the Director	Ms. J.L. Ganner	Halifax
Supervisor, Socio-economic Support	D.C. Thomas	Halifax
Market Development Officer	Ms. J.L. Raymond	Halifax
Seafood Consultant	Mrs. A.E. Bryant	Halifax
Public Information Officer	K.R. Weston	Halifax
Supervisor, Administrative Services	C.G. Allen	Halifax
Personnel/Payroll Clerk	Mrs. D.A. Boudreau	Halifax
Accounting Clerk	P.J. Foran	Halifax
Accounting Clerk	Miss N.A. Smith	Halifax
Clerk Typist	Mrs. J.A. Pepper	Halifax
Clerk Receptionist	Miss S.J. Kane	Halifax
Equipment Officer	VACANT	Pictou
Marine Resources Division		
Director	A.A. Longard	Halifax
Secretary to the Director	Mrs. M.N. Pepper	Halifax
Resource Management Officer	S.G. Roach	Halifax
Resource Management Officer	R. Crawford	Halifax
Fisheries Biologist	Mrs. M. Conner	Halifax

Estuarine and Inland Fisheries

Director	L.L. MacLeod	Pictou
Secretary to the Director	Mrs. Carol Cooper	Pictou
Biologist	B.C. Muise	Ostrea Lake
Maintenance Worker	R.A. Truen	Ostrea Lake
Biologist	M. Hill	Fraser's Mills
Biologist	D. MacLean	Fraser's Mills
Rearing Pond Attendant	D.J. MacDonald	Fraser's Mills
Rearing Pond Attendant	S. MacNeil	Fraser's Mills

Industrial Development Division

Director	J.A. Marsters	Halifax
Secretary to the Director	Mrs. N.L. Riles	Halifax
Co-ordinator, Development Programs	D.F. Hanson	Halifax
Incentive Programs Assistant	Mrs. M.E. Meagher	Halifax
Development Officer	R.C. MacLean	Halifax
Manager, Marine Technology	A.G. Boyden	Halifax
Fisheries Technician	O.E. Egilsson	Pictou
Supervisor, Plants and Facilities	G.B. Scott	Halifax
Fisheries Technician	W.J. MacDonald	Halifax
Port Facilities Engineer	M.F. Giles	Halifax
Supervisor, Resource Technology	M.A. Drebot	Halifax

Nova Scotia Fisheries Loan Board

Executive-Director	J.A. Marsters	Halifax
Manager, Fisheries Loans	E.A. MacIntosh	Halifax
Secretary to the Manager	VACANT	Halifax
Secretary	Miss N.E. Corkum	Halifax
Chief Accountant	C.E. Decker	Halifax
Accounting and Insurance Clerk	Mrs. L.M. Fraser	Halifax
Accounting Clerk	Mrs. B.J. Tribble	Halifax
Loan Officer	J.P. Sarty	Halifax
Loan Officer	B.M. Allen	Halifax
Loan Officer	B.E. Cox	Halifax
Assistant Loan Officer	Mrs. L.M. Provender	Halifax
Technical Services Officer	M. Myketyn	Halifax
Fishing Vessel Inspector	B.G.Stockley	Halifax

Nova Scotia Fisheries Loan Board — Continued		
Fishing Vessel Inspector	R.G. Wilkie	Pictou
Fishing Vessel Inspector	W.R. Buffett	Halifax
Fishing Vessel Inspector	T. Prewett	Halifax
Loans Administrator	E.J. Pellerin	Halifax
Training and Field Services Division — Training		
Director	J.J. McLevey	Halifax
Secretary to the Director	Mrs. B.J. O'Brien	Halifax
Supervisor, Fisheries Training Centre	D.F. Robertson	Pictou
Chief Clerk	Miss S.M. Bowron	Pictou
Instructor (Navigation)	L.M. Dube	Pictou
Instructor (Nets and Gear)	A.A. Kaiser	Pictou
Instructor (Navigation, Marine Emergency Duty)	D.B. MacCallum	Pictou
Instructor (Engines)	J.W. Grant	Pictou
Instructor (Engines)	VACANT	Pictou
Instructor (Engines)	G. Gauthier	Pictou
Instructor (Business)	Miss B.J. Wright	Pictou
Training and Fishing Gear Co-ordinator	M.P. Picco	Pictou
Instructor (Navigation)	A.F. Tobey	Pictou
Maintenance Worker	E.G. Dalton	Pictou
Maintenance Worker	C. Steele	Pictou
Housekeeping Aide	Mrs. L. Betts	Pictou
Training and Field Services Division — Field Services		
Supervisor, Field Service	C.F. MacKinnon	Halifax
Fisheries Representative	C.W. Rankin	Pictou
Fisheries Representative	L.A. Tobey	Port Hood
Fisheries Representative	A.P. Kehoe	Petit de Grat
Fisheries Representative	G.T. Boudreau	Little Dover
Fisheries Representative	G.C. Mossman	Rose Bay
Fisheries Representative	G.A. Nickerson	Clark's Harbour
Fisheries Representative	A.J. Muise	Middle West Pubnico
Fisheries Representative	R.K. McDormand	Granville Ferry

Department of Fisheries
Ordinary Expenditures

Fiscal Year Ending March 31	Total Ordinary Expenditure
1965	$ 230,787
1966	340,653
1967	321,742
1968	530,166
1969	412,577
1970	458,034
1971	1,020,778
1972	1,373,784
1973	908,457
1974	3,138,359 (1)
1975	1,088,534
1976	661,763
1977	2,350,456
1978	3,149,131
1979	5,377,213
1980	5,841,649
1981	11,047,135 (2)
1982	13,758,223
1983	12,642,688

(1) More than $2 million was spent in the form of special assistance to help the industry recover from a storm in June 1973.

(2) This includes over $5 million in capital advance interest charges for the Fisheries Loan Board previously accounted for under Department of Finance Estimaes. It is anticipated this procedure will continue, making a significant impact on the total ordinary expenditure.